

Polyfunctional Modifiers for Bitumen and Bituminous Materials with High Performance

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Abstract

© 2018 Alim Feizrakhmanovich Kemalov et al. Over the last decade increase in capacity and the intensity of vehicular traffic has increased manifoldly, including heavy trucks, super singles, and higher tire pressures, resulting in significant increase of dynamic loads on the road surface which in turn lead to high quality requirements for bitumen in order to avoid premature wear and failure of asphalt concrete pavements. One of the possibilities to increase the quality of bitumen is to use special additives and modifiers that can provide a high adhesion to mineral filler and inhibit the aging and degradation processes in the asphalt coating. To achieve this, in the present study composite modifiers based on bisimidazolines derivatives were synthesized. The developed polyfunctional modifier (PFM) of complex action provides enhanced thermal stability, significantly improves the adhesion between bitumen binder and aggregates, and also improves the physical-mechanical properties of the asphalt concrete. Based on the test results it is recommended to use the synthesized samples of the PFM additive with complex action in asphalt mixtures for road paving.

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